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June 22, 2015

RE: Amendment Letter
Lorton Workhouse Tunnel Survey – Structural Assessment
9601 Ox Road
Lorton, VA 22079

Freeland Engineering, P.C. is submitting this amendment to the final Structural Assessment that was completed on May 29, 2015. This letter will provide additional details and recommendations, as requested by Fairfax County, on the following items:

1. Bulkheads to restrict the flow of grout between tunnel areas.
2. Grout access port spacing.

The approaches to these items outlined below may require adjustment and flexibility based on conditions that arise from the different tunnel areas, approaches developed by the contractors during completion of the work and the materials being used. We are focusing on Priority 1 and Priority 2 areas that are shown on Plate 2 of the final report for the recommendations below.

1. Bulkheads will need to be constructed in the tunnels that are being grouted and placed at intersections of tunnels, holes in the tunnels and any large openings. There are several areas that have been identified that will need bulkheads in Priority 1 and Priority 2 areas.

    - The large hole in the tunnel wall at the entrance of W-12.
    - The intersections of Priority 1 tunnels with Priority 2 tunnels.
    - The intersection of Priority 2 tunnels with Priority 4 tunnels.
    - The entrance from the basement of building W-16 into Priority 2 tunnels.
    - Large utility penetrations into the buildings along Priority 2 tunnels.

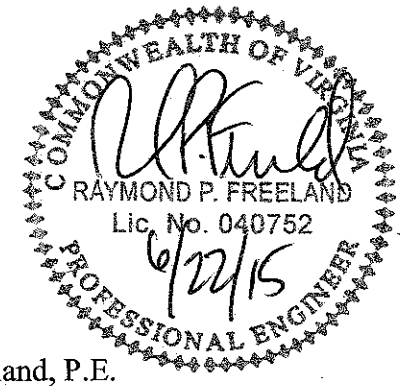
    The bulkhead installations could simply be accomplished by filling those areas with grout prior to starting the other areas. They also could be constructed of wood shoring or other materials. The final approach to the bulkhead construction will be determined after consultation with the contractor and the structural engineer of record. The structural engineer of record should approve any bulkheads being proposed and field monitor the placement and functionality during construction.

2. Grout access port spacing is suggested to be thirty (30) feet initially. Several areas of the Priority 1 and Priority 2 tunnels should be tested using this spacing to determine how the grout flows between the access ports and how this approach works. The spacing between the grout access ports, suggested approach to grouting and the type and slump of grout material can be adjusted based on field conditions and consultation between the structural engineer of record and the contractor.

The approach to grouting the tunnels is sound and it is anticipated that there will be limited issues in using this method of remediation. However, flexibility and adaptability in changing the processes and procedures in completing this method of remediation may be required. We envision this process will rely on communication between the County, client and contractor to successfully complete Priority 1 and Priority 2 of this project.

Please feel free to contact me at any time to discuss this amendment letter or any other matters regarding the structural assessment and remediation of the tunnels at this site.

Sincerely,



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President
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